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BULLETIN  
OF THE  
TORREY BOTANICAL CLUB

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OCTOBER, 1914

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Notes on Rosaceae—VIII

PER AXEL RYDBERG

DRYAS

Little has been added to the knowledge of this genus in the last eighty years. Only one species has been added, *Dryas tomentosa* Farr.

*Dryas integrifolia* Wahl. Many authors regard this as merely a variety of *D. octopetala*, as intermediate forms are met with, but these have only been found where the two species grow together and are probably all of hybrid origin. Nathorst\* was inclined to regard these forms as hybrids, but he did not call them by a hybrid name, denoting them as *D. octopetala* f. *intermedia*. Hartz† held the same opinion, but apparently by a slip of the pen called them *D. integrifolia intermedia* Nathorst. This hybrid has also been collected in Alaska at Orca, Prince William's Sound, 1899, *Coville & Kearney 1191*.

*Dryas octopetala* L. Hartz, *loc. cit.*, admitted several varieties of *Dryas octopetala*, viz. var. *minor* Hook., var. *hirsuta* Hartz, and var. *argentea* Blytt. The last one of these seems to be furthest from the type, but by no means deserving specific rank. Simmons described a similar form of *D. integrifolia*, viz. *D. integrifolia canescens*.

*Dryas tomentosa* Farr. This species is closely related to *D. Drummondii* and perhaps not distinct. It may be only a variety

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\* Öfvers. Kong. Sv. Vet. Akad. Hand. 41: 24. 1884.

† Medd. Groenl. 18: 321. 1895.

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standing in the same relationship to *D. Drummondii* as *D. octopetala argentea* Blytt stands to *D. octopetala*. This species has also been collected in the Canadian Rockies, *Macoun 65125*.

#### GEUM

*Geum vernum* (Raf.) T. & G. was originally described as *Stylopus vernus* Raf., and the writer is somewhat in doubt if this species should not be regarded as the type of a distinct genus. The habit is that of a typical *Geum*, but the receptacle in fruit becomes stalked above the hypanthium, and the bractlets are usually lacking. Occasionally, however, there are found minute bractlets in this species, and the receptacle is more or less stalked in *Geum rivale*. The generic characters of *Stylopus* do therefore break down, and it is perhaps better to regard it a *Geum*, especially as the general habit is not essentially different.

*Geum virginianum* L. This species has in general been very well understood. Murray, however, applied that name to *G. canadense* and redescribed the true *G. virginianum* as *G. laciniatum* Murr. Many have referred the latter synonym to *G. canadense* and Scheutz suggests that it may be the same as *G. agrimonioides* C. A. Mey., i. e. *G. Meyerianum* Rydb., but in my opinion it belongs to *G. virginianum* L.

*Geum camporum* Rydb. Some twenty years ago, the writer, when working over the Rosaceae of Nebraska, had trouble in determining some specimens of *Geum*, and did not know whether to refer them to *G. canadense* or to *G. virginianum*. These specimens had the thick leaves, the stout stem and branches, and the large fruiting head of the latter, but the receptacle was not glabrous and the achenes had the pubescence of *G. canadense*. When working up the material for the North American Flora, he found that the plant was more common in the prairie region of the Mississippi valley than was expected and that its range extended from Minnesota and South Dakota to Arkansas and Texas. As both *G. virginianum* and *G. canadense* are found in the region, *G. camporum* might be regarded as a hybrid of the two. These two have about the same distribution (except that *G. virginianum* is not found in Mexico), but *G. camporum* is not found except in the western part of their common range. It is, therefore, not probable that it is a

hybrid, and it is more likely a distinct species. The following specimens belong to it:

KANSAS: Manhattan, 1892, *Norton*; Riley County, 1895, *Norton 137*; Olathe, 1892, *Hitchcock*; Fort Riley, 1892, *Gayle 522*; Emporia, 1891, *E. Smith*; Cowley County, 1899, *Mark White 54*; Lawrence, *W. C. Stevens*.

NEBRASKA: Lincoln, 1887, *Webber*; Nehawka, *Sweezy*; Sargent Bluffs, 1853 or 1854, *Hayden*; Franklin, 1893, *Laybourne*; Middle Loupe, 1893, *Rydborg 1608*; Glenwood, 1888, *T. A. Williams*.

SOUTH DAKOTA: Black Hills, Fort Meade, 1887, *Forwood 15*.

OKLAHOMA: *Waugh 175*.

TEXAS: San Marcos, 1898, *Stanfield*; Crab Apple, *Jermey 471*; Industry, 1893, *Wurzelow*.

MINNESOTA: Fort Snelling, 1890, *Mearns 346, 347*.

ARKANSAS: Whippe Expedition, *Bigelow*.

*Geum canadense* Jacq. This has usually been known under the name *Geum album* J. F. Gmel. The latter was arbitrarily substituted by Gmelin, probably because he thought that it was more appropriate. I say arbitrarily and without good cause, for he simply based his species on Jacquin's plate and original description of *G. canadense*.

*Geum album* (i. e. *G. canadense*) has been reported from the valley of Mexico. As that station was so far remote from the otherwise known range of *Geum canadense*, the nearest station being in Texas, the writer thought that the specimens from Mexico belonged to some other species and that it was merely a case of misidentification. He found, however, in the National Herbarium three sheets collected by Schiede, *no. 580*, at San Angel, not far from Mexico City, and these specimens can not be distinguished from specimens from the United States. It was also collected at Chinantla, 1841, *Liebmann 1743*.

*Geum Meyerianum* Rydb. C. A. Meyer\* gave a very good description of this species, but mistook it for *G. agrimonoides* Pursh, which is not a *Geum* at all, but *Drymocallis agrimonoides* (Pursh) Rydb., until lately usually known as *Potentilla arguta*. It was, therefore, necessary to give another name to *Geum agrimoni-*

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\* Ind. Sem. Petrop. 11: Supl. 29, 1846.

*oides* of Meyer and the writer with pleasure dedicated it to the botanist who first distinguished it. It is strange that this species (or variety) of the *Geum canadense* group has not been recognized by any American authors. It was admitted and described also by Scheutz in his monograph.\* It is related to *G. canadense*, but the basal leaves and lower stem-leaves are pinnatifid and the stem is more hirsute. These characters are sometimes found in *G. hirsutum* Muhl. [*G. florum* (Porter) Bicknell], but the petals in *G. Meyerianum* are white and longer than the sepals, while in *G. hirsutum* they are pale yellow and much shorter.

The following specimens belong to *G. Meyerianum*:

NEW YORK: Fleishmann, Delaware County, 1892, *Hermann von Schrenk*; Tuxedo, 1896, *W. H. Lewis*; Oneida, 1903, *H. D. House*.

ONTARIO: Battersea, 1898, *Fowler*.

QUEBEC: Danville, 1894, *A. K. Berg*.

PENNSYLVANIA: New Danville, Pike Crossing, 1901, *Heller*; Bangor, 1899, *Porter*; Easton, 1899, *Porter*.

DISTRICT OF COLUMBIA: banks of canal, 1895, *Pollard*.

*Geum hirsutum* Muhl. This species has been well characterized by Porter and Bicknell under the names *G. album flavum* and *G. flavum*. It was also described by Fischer and Trautvetter, who mistook it for *G. canadense*, which they held distinct from *G. album*. The oldest name, however, is *G. hirsutum* Muhl. Muhlenberg listed it in his catalogue in 1813. In this publication it is to be regarded as a *nomen semi-nudum*, but nine years later Link gave it a short description, pointing out the essential characters.

*Geum decurrens* Rydb. Some specimens from New Mexico, Arizona and Colorado and named *G. strictum* seemed so different from all other specimens of that widespread and rather variable species, that the writer thought it advisable to propose in the North American Flora a new species based on these specimens. The essential characters are pointed out in that work. It is, however, advisable to cite some more specimens.

ARIZONA: Bakers Butte, Mogollon Mountains, 1887, *Mearns* 59.

NEW MEXICO: Mogollon Mountains, 1903, *Metcalf* 536.

COLORADO: Rico, 1898, *Crandall* 4109.

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\* Nov. Act. Soc. Sci. Upsala III. 7: 32. 1870.

*Geum oregonense* (Scheutz) Rydb. This was originally described as a variety of *G. urbanum* to which it is not closely related. Its relationship is with *G. macrophyllum*. Usually it is well distinguished from that species by its open inflorescence, smaller stem-leaves and smaller and usually paler petals, but intermediate forms are not lacking. Some of these at least may be regarded as hybrids. *Geum oregonense* is common throughout the Rocky Mountains, as well as the Sierra Nevada and the Cascades. In the southern Rockies, *G. macrophyllum* is not found, but it extends east to northern New England, where *G. oregonense* is not found at all. In California the characters separating the two species seem to be less marked, and considerable questionable material has been seen.

*Geum perincisus* Rydb. Many subarctic specimens which might have been referred to *G. oregonense* have the upper leaves deeply incised and the petals broader and in form approaching those of *G. strictum*. It is hard to say whether these should be regarded as a variety of *G. oregonense* or as a distinct species. I adopted the latter view, because all these specimens were far northern ones and some of them found much further east than any of the typical *G. oregonense*. The following specimens belong here:

ALASKA: Eagle, Yukon Valley, 1902, *Arthur Collier* 34, 35; Copper River region, 1902, *William L. Poto* 147.

YUKON: Fort Selkirk, 1899, *Tarleton* 120.

MACKENZIE: Fort Simpson, 1861-62, *Onion, Kennicott & Hardisty*; Fort Resolution, 1901, *Preble & Preble* 154.

ALBERTA: Cave Avenue, Banff, *McCalla* 2074.

MICHIGAN: Turin, 1901, *Barlow*.

*Geum strictum* Ait. is a very variable species. Usually the terminal leaflet is more or less rhombic, as it is commonly described, but not seldom it is rounded or subreniform as it is in *G. macrophyllum* or *G. oregonense*. It usually can be easily distinguished by its large rounded petals and always by its fruit. The lower portion of the style is never glandular and the upper portion has hairs about twice as long as those of the other two species. *Geum scopulorum* is the common form of *G. strictum* in the Rockies, a little less robust than in the East.

*Geum aleppicum* Jacq.\* has been regarded as a synonym of *G. strictum*. Being an older name it should have been substituted. But I think that it is well distinct from the North American plant. So are all specimens from Europe referred to *G. strictum*. Whether they should all be included or not in *G. aleppicum*, I could not tell, but it is evident that *G. strictum* should be excluded from the flora of Europe and Asia Minor.

*Geum mexicanum* Rydb. Specimens in habit much resembling *G. macrophyllum* have been collected in southern Mexico. They were also determined as that species. As *G. macrophyllum* has not been collected at any station nearer than Sierra Nevada in California, it is very improbable that that species should grow in southern Mexico. A closer examination of these specimens revealed that the petals and the fruit were essentially those of *G. strictum*. As the habit is quite different, a new species *G. mexicanum* was proposed and based upon these specimens. To this belong the following:

VERA CRUZ: Mount Orizaba, 1891, *Henry E. Seaton* 251.

HIDALGO: Sierra de Pachuca, 1901, *Rose & Hay* 5563; 1906, *Rose & Rose* 11489.

*Geum urbanum* L., a native of Europe and temperate Asia, has been introduced in this country and is well established at several places, especially at Cambridge, Massachusetts.

*Geum geniculatum* Michx. The type locality of this species was given as Canada. This must have been a mistake, for the plant is known only from the mountain slopes of North Carolina and eastern Tennessee.

*Geum rivale* L. This is a native of North America as well as Europe and Asia. Rafinesque thought that the American plant was different and redescribed it as *G. nutans* Raf. As there was an older *G. nutans*, Steudel proposed the name *G. Rafinesquianum* for the American plant, but this was unnecessary as that and the European one are identical.

#### HYBRIDS

Hybrids in *Geum* are not unknown in Europe; why should they be in America? *Geum intermedium* Ehrh., a hybrid of *G.*

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\* Coll. 1: 80.

*rivale* L. and *G. urbanum* L., has been known for a long time. *Geum rivale* L. hybridizes also here in America and the following hybrids have been known. As the flowers of *G. rivale* are quite different from those of most species of the genus, its hybrids are easily distinguished.

*Geum rivale* × *strictum*, *G. auranthacum* Fries, was the first one to be recognized. It was described from garden material, but the following native specimens are to be referred here:

ALBERTA: *Macoun 20016*.

NEW YORK: Catskills, near Hunter, 1898, *Britton*; shores of Lake Champlain, 1900, *N. L. & E. G. Britton*.

*Geum macrophyllum* × *rivale*, *G. pulchrum* Fern., is represented by the following specimens:

VERMONT: Mendon, *Eggleston*.

QUEBEC: Bic, 1905, *Williams, Collins & Fernald*.

The hybrids between the species of the *G. strictum* group are not so easily distinguished, partly because the species themselves are closely related and seemingly grade into one another. As the intergrading forms are found in the region where the ranges of two species overlap, they may represent hybrids. As examples of such hybrids may be given the following specimens:

*Geum oregonense* × *strictum*.

UTAH: Logan, 1910, *George Zundel 206* (in part).

MONTANA: Helena, 1908, *Butler 798*.

COLORADO: Honnold, 1901, *Tweedy 4172*.

*Geum macrophyllum* × *oregonense*.

BRITISH COLUMBIA: Scagit Valley, 1905, *J. M. Macoun 69914*.

WYOMING: Crevasse Mountain, Yellowstone Park, 1902, *Mearns 2191*.

MONTANA: Tobacco Mountains, 1909, *Butler 4231*.

OREGON: Oregon City, 1905, *Lyon 60*.

*Geum macrophyllum* × *strictum*.

MONTANA: Lake McDonald, 1901, *MacDougal 959*.

## SIEVERSIA

This genus was based on *Sieversia anemonoides* and hence monotypic. In 1823 Robert Brown extended the genus to include all the *Geums* without articulate styles. This limitation was



retained up to 1906, when Dr. Greene segregated from it *Acomastylis* and *Erythrocoma*. In my opinion the former was rightly taken out, as it differs from *Sieversia* by the same character of the fruit that separates *Anemone* from *Pulsatilla*. *Erythrocoma* on the other hand I can not regard as distinct generically from *Sieversia*. Its species differ from the type of *Sieversia* only in the erect instead of spreading petals and a better developed hypanthium. If *Erythrocoma* should be kept distinct, *Geum rivale* should be taken out of *Geum*, as it differs by just the same characters, and still that species frequently hybridizes with the other species. Dr. Greene made the following statements which are not exactly true: "*Sieversia* was founded on a Siberian undershrub, low and slender, with almost rotate calyx and corolla, the former nearly chorisepalous, and its mature styles are long, filiform, plumose to the very apex." There are apparently three species which have gone under the name *Sieversia anemonoides*, of which one can be called an undershrub, the other two having the habit of *Dryas octopetala*, being strongly caespitose with the branches more or less covered by soil and moss. I think the type of *Sieversia* was one of these. The difference between this caespitose stem and the branching rootstock of *Erythrocoma* is indeed very small. The styles of *Sieversia anemonoides* Willd., or *S. pentapetala* (L.) Greene, are not plumose to the apex, for the upper part is naked, soft, withering, as it is in *Erythrocoma*, the only difference being that it is very short, scarcely 2 mm. long. This naked portion of the style is found not only in the type of *Sieversia* and in *S. ciliata* and its relatives, but also in the *S. montana* group, to which *S. radicata*, *S. Peckii* and *S. calthifolia* belong. The naked portion in most is rather persistent, although usually withering in age, but in some species or even individuals it breaks off. It is however never articulated to the lower portion of the style as in *Geum*, where the upper portion, which is usually hairy, falls off very early. C. P. Smith\* describes the style of *Erythrocoma ciliata* as follows: "Style hooked, or articulated [*italics mine*], the terminal portion often deciduous." I have seen it somewhat bent or even occasionally hooked, but never with a proper articulation. The soft upper naked portion, after it has withered, often falls off at

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\* *Muhlenbergia* 8: 7. 1912.

the junctions with the hard persistent lower portion, but there is no marked articulation at this point as there is in *Geum*.

As to the limitation of the species, it is impossible for me to follow Dr. Greene in his segregation. The original two species of Pursh's *Geum triflorum* and *Geum ciliatum* are apparently well distinct; the intermediate forms may be hybrids. *Erythrocoma campanulata* Greene seems also to be a good species. In the North American Flora I also admitted *Sieversia grisea* (Greene) Rydb., *S. canescens* (Greene) Rydb., *S. flavula* (Greene) Rydb. and *S. brevifolia* (Greene) Rydb. If the first two really are specifically distinct from *S. triflora* (Pursh) R. Br. and the last two from *S. ciliata* (Pursh) G. Don is questionable. The other species of *Erythrocoma* of Greene are nothing but forms of those mentioned, due to local conditions.

*Sieversia pentapetala* (L.) Greene (*S. anemonoides* Willd.) is an Asiatic species reported for America only from the Aleutian Islands. The only specimens I have seen from this region were collected by Dall.

*Sieversia glacialis* (R. Br.) Spreng. This species has the floral characters of the genus *Erythrocoma* Greene, but the habit suggests the species of *Acomastylis*. Some of the specimens are as follows:

ALASKA: York Plateau, near Ip-muk, Port Clarence, 1901, *Walpole 1906*; Port Clarence, 1901, *Collier*.

SIBERIA: Whalen, 1894, *J. T. White*.

*Sieversia campanulata* (Greene) Rydb. is the best species of *Erythrocoma* described by Dr. Greene. The broad reddish petals much exceeding the obtusish sepals and bractlets. It seems to be confined to the Olympic Mountains. The following specimens belong here:

WASHINGTON: Olympic Mountains, *Elmer 2529*; *Wilkes Expedition 352, 813* in part.

*Sieversia triflora* (Pursh) R. Br. This is distinguished from *S. ciliata* (Pursh) G. Don in the broader, less deeply cleft leaflets and the more persistent style-tips, as pointed out by C. P. Smith, but there is another character which seems to have been overlooked. In all the other species referred to *Erythrocoma*, the hypanthium is rounded or even sunken at the base, even at flowering time, and the bractlets are not much, if any, exceeding the

sepals in length; in *S. triflora* the hypanthium at least in anthesis is acute at the base and the bractlets much exceeding the sepals in length. If so characterized, *Sieverisa triflora* takes in all the forms growing on the prairies or plain region east of the Rockies and extending into Montana and Wyoming.

*Erythrocoma cinerascens* Greene and *E. affinis* Greene I can not distinguish from it. The former is a depauperate form, I take to be due to a higher altitude, represented by most specimens from the Black Hills and Wyoming. The latter is the high northern form with narrower leaflets and brighter coloration. If held distinct it had two older names than that of Dr. Greene, viz. *Sieversia rosea* Graham and *Geum Grahami* Steudel.

*Sieversia grisea* (Greene) Rydb. The following proposed species of *Erythrocoma*, viz. *E. grisea*, *E. arizonica*, *E. tridentata* and *E. aliena*, all by Greene, have many characters common with *S. triflora*, viz. the habit, leaf-form and toothing, pubescence, and styles, but the hypanthium is not acute at the base, the petals are broader and the bractlets shorter, slightly if at all longer than the sepals.

They were all described from Arizona and Chihuahua, but the same forms are common in Colorado and rarely as far north as Montana and Washington. They constitute the mountain representatives of *S. triflora*. Of these *Erythrocoma grisea* is the first one in the list. The type does not represent the common form, but is a depauperate form with short leaves, standing in the same relationship to the common form as *E. cinerascens* Greene stands to *Sieversia triflora*. The common better-developed form represents *E. arizonica* and is common in Colorado. *E. tridentata* is a form with looser pubescence and narrower leaflets, otherwise not distinguishable from *E. arizonica*. *E. aliena* is exactly the same as *E. grisea*.

*Erythrocoma australis* I regard as a hybrid between *Sieversia grisea* and *S. ciliata*. See my notes in the North American Flora.

*Sieversia canescens* (Greene) Rydb. The forms of *Erythrocoma* of the mountains of California, Oregon and Washington differ very little from *S. grisea*, as here understood, except in a denser pubescence and shorter bracts. It is doubtful if they should be regarded as a distinct species. I retained, although

with hesitation, the specific rank of these forms, on which *Erythrocoma canescens* Greene was based.

*Sieversia ciliata* (Pursh) G. Don. This species is confined to the Rocky Mountains and running down into the Cascades of Washington. It is found neither on the plains nor in the Sierra Nevadas. In most of its range it is associated with *S. grisea* and intermediate forms are not lacking; they are perhaps to be explained as of hybrid origin. The center of its distribution is in the northern Rockies, while that of *S. grisea* is more common in the southern. Its range barely touches that of *S. triflora* and only slightly overlaps that of *S. canescens*.

*Sieversia flavula* (Greene) Rydb. It was only with reluctance I admitted this as a species in the North American Flora. It is rather local in the mountains of Wyoming and Montana. The following specimens have been seen.

WYOMING: *A. Nelson* 829, 7501.

MONTANA: *Chestnut & Jones* 105; *Rydberg & Bessey* 4414.

*Sieversia brevifolia* (Greene) Rydb. This is a derivative of *S. ciliata*. It is confined to the mountains of central Utah. *S. Watson* 318, doubtfully referred here by Dr. Greene, I think should be referred to *S. ciliata*. The following specimens belong here:

UTAH: Panguitch Lake, *Jones* 6002g; Fish Lake, *Jones* 5779g, 54410; *L. F. Ward* 378.

*Sieversia Peckii* (Pursh) R. Br. This and the three following form a distinct natural group, which is represented in Europe by *Sieversia montana* and other species. *S. Peckii* has been confused with *S. radiatum* or has been made a variety of the same. It is, however, perfectly distinct. It is confined to the mountains of New Hampshire and Maine.

*Sieversia radiata* (Michx.) R. Br. This is closely related to the northwestern *S. calthifolia* (Menzies) D. Don. It is confined to the region of which Roan Mountain is the center, and the majority of the specimens in our herbaria are from that very mountain.

*Sieversia calthifolia* (Menzies) D. Don. This species is rather variable. In the high arctic regions it becomes stunted and more hairy (var. *congesta*), and then has a quite different appearance. Another cause for the many synonyms cited under the species

has been the supposition that there are two species in the north-west represented by *Geum calthifolium* Menzies and *Geum rotundifolium* Langsd. It is evident that *G. calthifolium* Menzies described in Rees' Cyclopedia was based on the plant known as *Geum rotundifolium*. Scheutz seemed to be of a different opinion. He kept *Geum rotundifolium* and *G. calthifolium* distinct. His description of the latter (which by the way does not agree with that in Rees' Cyclopedia) seems, however, to be drawn from specimens of *S. macrantha* Kearney or some related species and not from *S. calthifolia*.

*Sieversia macrantha* Kearney. This species was distinguished by Kearney and his description was found in the manuscript of the Flora of Alaska, which has been in preparation for many years by the botanists of the United States Department of Agriculture. As there was no telling when this work would be published, I adopted Kearney's name and description, with such slight modifications in form as to make it congruous with the general style used in the North American Flora. I have seen no specimens except those of the type collection. It may be possible that Scheutz drew his characterization of *G. calthifolium* from specimens of this species.

#### ACOMASTYLIS

As stated before, the writer agrees with Dr. Greene that the specimens referred to it should be removed from *Sieversia* as well as from *Geum*. They are closely related and the distinguishing characters are rather trivial, but as these trivial characters are supported by different ranges, the writer thinks they are of specific value.

*Acomastylis humilis* (R. Br.) Rydb. and *A. Rossii* (R. Br.) Greene. The former seems sometimes to grade into the latter, but as its range is much more limited than that of *A. Rossii*, it is at least a geographical species. It is confined in America to the Aleutian and Pribiloff Islands, but is also found in eastern Siberia, while *A. Rossii* extends well into Arctic America as far east as Melville Island.

*Acomastylis gracilipes* (Piper) Greene and *A. depressa* Greene are only known from the type collections. They are closely related to *A. sericea*, but the hypanthium is more flat, not turbinate as i

is in *A. sericea* and *A. turbinata*. *A. gracilipes* was first described as a *Potentilla*. In this respect it has had the same fate as *A. turbinata*.

*Acomastylis sericea* Greene has a more western and northern distribution than *A. turbinata* (Rydb.) Greene. The following specimens have been seen.

NEVADA: Ruby Mountains, *Heller 9139, 9359*; East Humbolt Mountains, *Watson 320*; same locality, *M. E. Jones 1897*.

IDAHO: Salmon River Mountains, *Henderson 4035*.

MONTANA: Indian Creek and Pony, *Rydberg & Bessey 4416, 4417*; Spanish Peaks, *Flodman 608*; Belt Mountains, *Scribner 40*; Rone Mountain, *Chestnut 9*.

WYOMING: Wind River Mountains, *V. Bailey*; northwestern Wyoming, *Rose 290*.

*Acomastylis turbinata* (Rydb.) Greene. The range of this species covers that of the preceding, but includes also Colorado, Utah, Arizona and New Mexico.

#### COWANIA

*Cowania mexicana* D. Don is not found within the United States, and not even near the boundary. It is confined to central Mexico. The plant of southwestern United States and northern Mexico should be known as *C. Stansburiana* Torr., which differs in the form of the hypanthium and the lobing of the leaves. *C. mexicana* is represented by the following specimens:

MEXICO: Durango, 1896, *Palmer 12, 71*; *Nelson 4696*; Sierra Madre, *Seeman*; *Hartweg*.

*Cowania Davidsonii* Rydb. is closely related to *C. Stansburiana*, but differs in the elongated pedicels, the form of the hypanthium, etc. The following specimens belong to it:

ARIZONA: Blue River, September 8, 1902, *A. Davidson 754*; Castle Creek, Bradstran Mountains, 1892, *Toumey 129d*.

*Cowania alba* Goodding is unknown to me, except as to a poor fragment collected by Purpus and as to the descriptions. Purpus' specimens may well represent a hybrid of *C. Stansburiana* and *Kuntzia tridentata*.

*Cowania ericaefolia* Torr. and *C. Howardi* S. Wats. are the same. The writer has seen the types of the two, which are

identical, but no other specimens. The species must be very local.

#### FALLUGIA

Three species have been proposed in this genus, viz. *F. paradoxa* (D. Don) Endl., *F. acuminata* Cockerell and *F. micrantha* Cockerell. Besides, the first has had two additional specific names, viz. *Geum cercocarpoides* DC. and *Fallugia mexicana* Walp. It has been impossible for the writer to distinguish more than one species, for the lobing or not lobing of the sepals is very inconstant, the same individual having both lobed and unlobed sepals, and the size of the petals is so variable, that no line can be drawn between *F. acuminata* and *F. micrantha*. In the essentially staminate plant the petals are usually larger.

#### KUNTZIA vs. PURSHIA

Dr. Greene,\* when adopting the name *Kuntzia* instead of *Purshia*, made the following remarks: "A well-known rosaceous type of Rocky Mountain and Californian shrub, at first referred to the South American genus *Tigarea*, was taken up by the elder De Candolle in 1818, as a new genus, under the name *Purshia*. Sprengel, who about a year earlier, had himself published a genus *Purshia*, soon after proposed *Kuntzia* for the name of the Candollean *Purshia*; and this will apparently be the proper name for the western genus now called *Purshia*, which latter name is more than once revertible; for Rafinesque had a *Purshia* in print as early as 1813. I find no record of any earlier *Kuntzia* than this of Sprengel, which most writers who have mentioned it, say was substituted for the Candollean *Purshia* in Sprengel's *Systema*, 1825; but I find it four years earlier than that, in the first edition of Steudel's *Nomenclator* (1821)."

There is more than one correction to be made in the above statement. *Purshia* DC. was not published in 1818. The publication is usually cited as *Purshia* DC., *Trans. Linn. Soc. Bot.* 12: 157. 1818. The title page of that volume bears the year 1818, but the first part of it, in which *Purshia* appears, was published in 1817. The first publication of *Purshia* Sprengel was neither in his *Systema* (1825), nor in Steudel's *Nomenclator*, but in

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\* *Pittonia* 2: 298. 1892.

Sprenkel's *Anleitungen*,\* 1817. Then comes the question which was the earlier, *Purshia* DC. or *Purshia* Spreng. Fortunately, Sprengel himself when proposing *Kuntzia* gave under *Purshia* DC., which he replaces, a reference to the Supplement to Lamarck's *Encyclopedie Methodique*,† where Poiret publishes *Purshia* for De Candolle, the year before its technical publication by De Candolle in the Transactions of the Linnean Society. There is, therefore, no question concerning *Purshia* DC. antedating *Purshia* Spreng. But how about *Purshia* Raf.? I have been unable to find it mentioned in any of Rafinesque's writings of 1813. The Kew Index gives the publication of *Purshia* Raf. as "Am. Month. Mag. (1819) 191." At the place referred to we find only the following remarks under *Onosmodium*: "Sprengel has since given it the name *Purshia*, which had already been applied to another genus." Nobody can tell if this refers to an earlier *Purshia* Raf. It may just as well refer to the earlier *Purshia* DC. Apparently the first appearance of *Purshia* Raf. was in *Journal de Physique*‡ in 1819. It is evident that *Purshia* DC. can not be thrown out on any other ground than by regarding *Burshia* Raf. (1808) an error in orthography. It was not a misprint, for Rafinesque states that it was named after Mr. Bursh and on the unpublished plate of Rafinesque's, the original spelling is *Burshia*.

#### CHAMAEBATIA

*Chamaebatia australis* (Brand.) Abrams has been collected in Lower California by Orcutt and Miss Irish and in southern California by Pringle in 1882 and by Chandler, no. 5214.

#### CERCOCARPUS

*Cercocarpus macrophyllus* C. K. Schneider is the most common of the Mexican species of *Cercocarpus*. Most of the material labeled as *C. fothergilloides* belongs to this species. Some of the specimens are cited below.

VERA CRUZ: Orizaba, 1892, *J. G. Smith* 199; Cuerta de San Juan del Estado, *Liebman* 1719.

HIDALGO: Pachuca, 1905, *Purpus* 1139.

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\* Ed. 2, 2: 450. 1817.

† v. 4: 623. 1816.

‡ 89: 257. 1819.



JALISCO: *Leon Dequet.*

OAXACA: 1894, *Pringle 5871.*

GUERRERO: Chipancingo, 1903, *Nelson 7068*; between Chilapa and Texla, 1894, *Nelson 2168.*

*Cercocarpus fothergilloides* HBK. To this species the following are to be referred.

PUEBLA: Cerro de Paxtle, *Purpus 4200.*

VERA CRUZ: Orizaba, *F. Mueller.*

*Cercocarpus Traskiae* Eastw. has not been collected outside of Santa Catalina Island, California.

*Cercocarpus mojadensis* C. K. Schneider. To this belongs the following specimens:

COAHUILA: Sierra Mojada, 1892, *M. E. Jones 134*; Sierra de Plata, 1905, *Purpus 1059*; San Lorenzo Canyon, 1905, *Palmer 537.*

*Cercocarpus Pringlei* (C. K. Schneider) Rydb. This was originally described as a variety of *C. mojadensis*, but I think it is specifically distinct.

*Cercocarpus macrurus* Rydb. This is the *C. parvifolius* of the Klamath and Siskiyou region of California and Oregon. It is nearest related to *C. montanus* Raf., differing in the longer leaves with more numerous lateral veins and the large fruit. Although the characters separating it from *C. montanus* on one hand and *C. Douglasii* on the other are not so striking, it is geographically separated from both, the former being limited to the Rockies and the latter to central and southern California. The following specimens belong to it:

CALIFORNIA: Siskiyou Mountains, 1880, *Engelmann* (fruit); same locality, 1866, *Henderson* (flowers); Ashland, 1866, *Henderson 259* (flowers and young fruit); Klamath River at Keno, *Cusick 2835*; Klamathon, 1903, *Copeland 3504*; no locality, *Wilkes Expedition 1167.*

OREGON: Weiner, 1898, *Walpole 81*; Barclay Springs, Modoc Point, *Coville 1523* in part.

*Cercocarpus montanus* Raf. There have been two species confused under the name of *C. parvifolius* Nutt. even from its first description in the Botany of Beechey's Voyage by Hooker & Arnott. These authors adopted Nuttall's manuscript name, but included in their description not only Nuttall's type from the Rockies but

also specimens collected by Douglas in California. The latter were the base of the description and figure in Hooker's *Icones*, plate 323. It is a question whether Hooker & Arnott did not have Douglas's specimens in mind when they drew the description of *C. parvifolius*. It would, therefore, be some doubt as to which the name *C. parvifolius* should be applied, the low shrub of the Rocky Mountains or the more tree-like one from southern and central California. Sargent referred both to *C. parvifolius*, while C. K. Schneider, who without question has done the best and most critical work on the genus, referred the latter to *C. betulaefolius*, yes, even made it the "var. *typicus*" of that species. Schneider laid more stress on the form and size of the teeth of the leaves and in this respect Douglas's plant is more like *C. betuloides*. If the pubescence and leaf-form are considered, it resembles more the plant of the Rockies. As said before, it is doubtful which of the two should be regarded as *C. parvifolius*. As Nuttall's plant is included in the original description it must be regarded as the type, but unfortunately, or rather fortunately, it (i. e. the Rocky Mountain shrub) had already a name, *C. montanus* Raf., based on *C. fothergilloides* Torrey, not that of Humboldt, Bonpland and Kunth; and *C. parvifolius* becomes a synonym. Hence the more tree-like species of California, represented by Douglas's specimens, was left without a name, and the writer proposed the name *C. Douglasii* in the North American Flora.

*Cercocarpus Douglasii* Rydb. See the discussion above. Of this species I have seen many specimens. They are all from California, except the following:

ARIZONA: Jucumba Hot Springs, 1894, *Schoenfeldt* 335.

LOWER CALIFORNIA: Nachaguere Valley, 1894, *Schoenfeldt* 3432 and *Mearns* 3390.

*Cercocarpus rotundifolius* Rydb. This is related to the preceding species, but differs in the small broad rounded-oval leaves; in *C. Douglasii* the leaves are obovate or oblanceolate, distinctly cuneate at the base. To *C. rotundifolius* belongs the following specimens:

CALIFORNIA: Los Angeles County, 1901, *Grant* 3488; 1850, *C. C. Parry*; 1890, *H. E. Hasse*.

LOWER CALIFORNIA: mountains, 1882, *Pringle*.

*Cercocarpus alnifolius* Rydb. This is the same as *C. betulaefolius* *Blancheae* of C. K. Schneider, mainly; although that author had included some specimens of *C. Douglasii* mixed in with the type. As a species had already been named after Mrs. Blanche Trask, viz. *C. Traskiae*, it would be bad taste to propose another one. Besides personally I dislike the use of the given name of a person as forming the specific name. I, therefore, adopted the more appropriate *C. alnifolius* instead of the varietal name *Blancheae*. This species is also endemic to Santa Catalina Island, California.

*Cercocarpus betuloides* Nutt. Hooker in his *Icones* changed the name to *C. betulaefolius*, which form has been more commonly adopted than the original. It has also been regarded as a variety of *C. parvifolius* Nutt., i. e. of *C. montanus* Raf., but is evidently distinct.

*Cercocarpus minutiflorus* Abrams. Nothing further has been added to the knowledge of this species since its publication.

*Cercocarpus flabellifolius* Rydb. In Utah and northwestern New Mexico is found a mountain mahogany, having the pubescence of the Californian *C. betuloides* and the coarse toothing of the leaves of *C. montanus*. It has obovate leaves as the latter, but much broader and with more flaring teeth. This character is best seen in the type collected by L. F. Ward. The following specimens are to be referred here:

UTAH: Glenwood, 1875, *Ward 122*; western slope of La Sal Mountains, 1911, *Rydberg & Garrett 8566*; south side of Abajo Mountains, *9275*; Juab, 1902, *Goodding 1073*; Silver Reef, 1894, *Jones 5163, 5163b*; Laccolite, *Jones 5663, 5204e*; Marysvale, *Jones 5405d*; Cedar City, *Jones 5208, 5404d*; Salina Canyon, *Jones 5441m*; Fish Creek Canyon, 1909, *Garrett 2523*.

NEW MEXICO: Aztec, 1899, *Baker 384*.

*Cercocarpus argenteus* Rydb. This is related to *C. montanus*, but the pubescence is appressed-silky, the leaves narrower, toothed above the middle with smaller teeth. The following specimens belong here:

TEXAS: Randall County, *Eggers*; Llano Estacado, *Bigelow* (Whipple Exp.); Guadalupe Mountains, 1901, *Bailey 436*.

NEW MEXICO: El Capitan Mountains, 1900, *Earle 209*; same

locality, *Plummer*; Winsor's Ranch, 1908, *Standley* 4104; Ratan Mountains, 1903, *Griffiths* 5497; White Mountains, 1907, *Wooton* & *Standley* 3606; Sacramento Mountains, 1899, *Wooton*; Las Vegas, 1891, *Dewey*; Folsom, 1903, *A. Howell* 171.

COLORADO: North Cheyenne Canyon, 1894, *E. A. Bessey*.

*Cercocarpus paucidentatus* (S. Wats.) Britton. This species was based on *Cercocarpus parvifolius paucidentatus* S. Wats. In order to determine the type of the species, we must find the type of the variety. The latter was based on *Shaffner* 114, *Parry & Palmer* 224\* from San Louis Potosi, and *Wright* 1056 from Texas or eastern New Mexico. The first, *Shaffner* 114, must be regarded as the type, but *Parry & Palmer* 225 is the same. Upon this very number C. K. Schneider based his *C. Treleasii*, which therefore becomes a synonym. *Wright* 1056 belongs to another species, the same as Wilcox's specimen from which Britton mainly drew his description of *C. paucidentatus*. This was without a specific name, and I adopted Schneider's varietal name for it. The following specimens belong to *C. paucidentatus* (S. Wats.) Britton or *C. Treleasii* C. K. Schneider.

SAN LOUIS POTOSI: *Shaffner* 114, 476, 635; *Parry & Palmer* 225.

HIDALGO: Ixmiquelpan, 1905, *Purpus* 1383.

*Cercocarpus eximius* (C. K. Schneider) Rydb. This is *C. paucidentatus* Britton, mainly as to the description, but not the type. Sargent regarded it as the same as *C. brevifolius* A. Gray. Schneider first admitted it as a variety *eximius*, but afterwards adopted Sargent's views. He, however, did not have a clear conception of the same, for *Rusby* 125 and other specimens with better developed and more toothed leaves, he referred doubtfully to *C. betulaefolius*. Leaves toothed above the middle are not uncommon and sometimes found together with perfectly entire-margined leaves on the same bush. It is to be admitted that it is closely related to *C. breviflorus*, but differs in the spreading pubescence and the longer hypanthium. It is also much more common than *C. brevifolius* and its range extends through New Mexico, Arizona, Chihuahua and Sonora.

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\* This is evidently a misprint for 225, because *Parry & Palmer* 224 is a species of *Rubus* and also cited by Watson under *Rubus trivialis*. It is now known as *R. oligospermus* Thornber.

*Cercocarpus breviflorus* A. Gray. This has nearly the same range as the preceding, but is more eastern, being found also in western Texas and Coahuila. It is, however, lacking in Sonora and western Arizona.

*Cercocarpus ledifolius* Nutt. is the most widely distributed species of the genus. Its characters are rather constant. It varies, however, in the width of the leaves and in the margin being more or less revolute. *Cercocarpus ledifolius intercedens subglabra* C. K. Schneider is either an extremely narrow-leaved form or else a hybrid with *C. intricatus*.

*Cercocarpus hypoleucus* Rydb. This has been mistaken for both *C. ledifolius* and *C. intricatus*, but the villous pubescence of the lower surface of the leaves should exclude it from either, though it may cause some confusion with *C. arizonicus*. It has smaller, narrower leaves with sharper petioles than *C. ledifolius*, but larger leaves, less enrolled, and larger fruit than *C. intricatus* and *C. arizonicus*. The following specimens are referred here:

MONTANA: Melrose, 1895, *Rydberg 2695; Shear 3216*; Red Rock, *Shear 3349*; Helena, 1908, *Butler 713, 774*; Tobacco Mountain, *Butler 4236*; Montana, *Kelsey*; Lombard, 1900, *Blankinship*.

WYOMING: Wolf Creek Canyon, *A. Nelson 2292*; between Sheridan and Buffalo, 1900, *Tweedy 3236*; Big Horn, 1899, *Tweedy 2540*; Powder River, 1901, *Goodding 252*; 1893, *Evermann*; Big Horn Basin, 1893, *V. Bailey*; Tongue River, 1898, *Tweedy 39*.

IDAHO: Salmon River, *Henderson 3143 and 3790; V. Bailey 49*.

UTAH: Raft River, *S. Watson 313* in part.

OREGON: Snake River, 1897, *Sheldon 8201*.

*Cercocarpus intricatus* S. Wats. M. E. Jones reduced this to a variety of *C. ledifolius*, claiming that they grade into each other; and still he proposed a new species *C. arizonicus*, which is much closer to *C. intricatus* than *C. ledifolius* is. I have seen the specimens from Willow Spring, Arizona, on which *C. arizonicus* was based and these are identical with Jones's own specimens from Deep Creek, determined by Jones as *C. ledifolius intricatus*. It is evident that Jones did not distinguish these species very well. Some of Jones's specimens are evidently hybrids. See below. The range of *C. intricatus* includes parts of Utah, Arizona and Nevada. A specimen from California, but with much shorter

leaves, scarcely 5 mm. long, is referred doubtfully to this species. It is *Vernon Bailey 2019* of the Death Valley expedition.

*Cercocarpus arizonicus* Jones. This species is much more local than *C. intricatus*. It is closely related to it, perhaps not distinct. If *C. hypoleucus* were found in the region this might be a hybrid between that species and *C. intricatus*.

UTAH: Deep Creek, 1891, *M. E. Jones*; Tropic, 1894, *Jones*.

NEVADA: Rock Mountains, 1898, *Purpus 6336?*

#### HYBRIDS

Mr. Coville has collected specimens which are without doubt a hybrid between *C. ledifolius* and *C. macrurus*. A specimen of the hybrid and one of each of the two parents is mounted on the same sheet, his *no. 1523* in the National Herbarium. When these two species hybridize, it would be expected that some of the more closely related species might do so. This may explain some of the intermediate forms between *C. betuloides* and *C. Douglasii*, between *C. montanus* and *C. flabellifolius*, and between *C. ledifolius* and *C. intricatus*.

Also a specimen collected by *M. E. Jones* at Silver Reef in 1894 seems to be a hybrid of *C. ledifolius* and *C. arizonicus*. A specimen of the latter is included under the same number, *5149k*, and *C. ledifolius* is found in the region.

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